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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,101	03/16/2004	Marc Schaepekens	RD-28,965-5	3227

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GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER
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XU, LING X

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/802,101

Applicant(s)

SCHAEPKENS, MARC

Examiner

Ling X. Xu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 37, 39-59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 37 and 39-59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. <u>6/25/2004</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                     |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/16/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Upon reconsideration, the Examiner decided to withdraw the indicated allowability of claim 37 made during a telephone conversation with Mr. Andrew J. Caruso on 6/25/2004.

#### ***Specification***

2. The disclosure is objected to because of the following informalities: in the specification, page 1 under "RELATED APPLICATION", line 2, the -- now US Patent No. 6,743,524 -- should be added after "filed May 23, 2002".

Appropriate correction is required.

#### ***Claim Objections***

3. Claims 43 and 45 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 43 recites the at least one layer is an ultraviolet radiation absorbing layer, which does not further limit the subject matter of claim 37, which recites that the at least one layer comprising an ultraviolet radiation-absorbing organic material.

Claims 45 recites that the ultraviolet radiation-absorbing layer comprises at least one of inorganic materials which does not further limit the subject matter of claim 37, which recites that the absorbing layer comprising ultraviolet radiation-absorbing organic material.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 37, 39-47 and 51-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tahon et al. (US 6,355,125) in view of Ikai et al. (US 6,015,951).

With respect to claims 37, 39 and 53-55, Tahon discloses a substrate comprises one or more functional layers necessary for making an electric or electronic device such as a photovoltaic cell or LED and a thin glass sheet laminated to substrate as barrier layer (Col. 3, lines 30-50). The barrier layer comprises inorganic material such as SiO<sub>x</sub> or Ta<sub>2</sub>O<sub>5</sub> (Col. 6, lines 45-50). Since Tahon discloses the same barrier layer as claimed, the same barrier layer would also has the same properties such as water vapor transmission rate and the oxygen transmission rate as recited in claims 37 and 53-54.

Tahon also discloses the thin glass sheet may be provided with an additional barrier layer to reduce permeability of gases such as oxygen or water vapor (Col. 6, lines 35-40).

With respect to claims 40-42, Tahon discloses the use of adhesive layer comprising polyethylene between the barrier layer and the substrate (Col. 7, lines 1-10).

With respect to claims 43-44 and 46-47, Tahon discloses the functional layers can be an electroconductive layer in LCD cell comprising tin oxide, indium oxide or tin doped indium oxide.

Tahon also discloses the electroconductive layer comprises the same component as the claimed abrasion resistant layer and the infrared reflecting layer, the same electroconductive layer can also function as an abrasion resistant layer or an infrared reflecting layer.

The thickness of the inorganic barrier layer is lower than 2 micron, which is within the range recited in claims 51-52.

It is noted that claim 56 is a product-by-process claim. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps (MPEP 2113). “[E]ven though product – by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 227 USPQ 964, 966.

With respect to claims 57-58, Tahon discloses the substrate may be a metal, foil, paper or a plastic such as polyethylene terephthalate, polyethersulfone, etc. (Col. 6, lines 8-30).

Tahon does not disclose the photoelectric device comprises a UV absorbing layer as recited in claims 37 and 45.

However, adding a UV absorbing layer to the photoelectric device is known in the art.

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Ikai teaches a photoelectric transfer device comprise a film composed of a UV absorbing compound such as titanium oxide, zinc oxide, cerium oxide and organic absorbers as well (Col. 31, lines 10-35).

Therefore, it would have been obvious to one of ordinary skill in the art to include a UV absorbing layer in order to absorb UV radiation, protect the device from UV radiation damage and prolong its operational life.

With respect to claims 57-59, Tahon does not specify that the substrate is made of metal web.

Ikai teaches that the substrates used for the device can be a transmitting substrate such as plastic film of polyimide, polyether-sulfone, polyethylene terephthalate etc., metallic structures having slit-like channels on the surface such as aluminum, iron, or glass substrate. Depend on the application, the substrates are also subject to surface treatment (Col. 26, lines 5-22).

Therefore, it would have been obvious to one of ordinary skill in the art to use the substrates as taught by Ikai including the metal web in order to obtain a transmitting substrate for the photoelectric device.

4. Claims 37, 39-48 and 50-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al (US 6,198, 217) in view of Ikai et al.(US 6,015,951).

With respect to claims 37, 39, 48 and 50-55, Suzuki discloses an organic EL unit covered with a protective double layer made of an organic barrier layer and an inorganic barrier layer (Abstract).

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Suzuki also discloses the inorganic barrier layer is made of metal oxide and metal nitride such as  $\text{Si}_3\text{O}_4$ ,  $\text{Si}_3\text{N}_4$ , and  $\text{TiN}$  (Col. 7, lines 15-25). The thickness of the inorganic barrier layer is 0.1-2 micron (Col. 7, lines 25-30), which is within the range recited in claims 51-52.

Since Suzuki discloses the same barrier layer as claimed, the same barrier layer would also have the same properties such as water vapor transmission rate and the oxygen transmission rate as recited in claims 53-54.

With respect to claims 40-42, Suzuki discloses the use of adhesive layer comprising polyethylene between the barrier layer and the substrate (Col. 7, lines 45-60).

With respect to claims 43-44 and 46-47, Suzuki discloses the EL unit comprises an anode of a conductive material such as indium tin oxide.

Suzuki discloses the electroconductive layer comprises the same component as the claimed abrasion resistant layer and the infrared reflecting layer, the same electroconductive layer can also function as an abrasion resistant layer or an infrared reflecting layer.

It is noted that claim 56 is a product-by-process claim. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps (MPEP 2113). “[E]ven though product – by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 227 USPQ 964, 966.

With respect to claim 57, Suzuki discloses the substrate may be a glass, or polyethylene or polymethyl methacrylate (Col. 7, lines 50-60).

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Suzuki does not disclose the photoelectric device comprises a UV absorbing layer.

However, adding a UV absorbing layer to the photoelectric device is known in the art.

Ikai teaches a photoelectric transfer device comprise a film composed of a UV absorbing compound such as titanium oxide, zinc oxide, cerium oxide and organic absorbers as well (Col. 31, lines 10-35).

Therefore, it would have been obvious to one of ordinary skill in the art to include a UV absorbing layer in order to absorb UV radiation, protect the device from UV radiation damage and prolong its operational life.

With respect to claims 57-59, Suzuki does not specify that the substrate is made of metal web.

Ikai teaches that the substrates used for the device can be a transmitting substrate such as plastic film of polyimide, polyether-sulfone, polyethylene terephthalate etc., metallic structures having slit-like channels on the surface such as aluminum, iron, or glass substrate. Depend on the application, the substrates are also subject to surface treatment (Col. 26, lines 5-22).

Therefore, it would have been obvious to one of ordinary skill in the art to use the substrates as taught by Ikai including the metal web in order to obtain a transmitting substrate for the photoelectric device.

5. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al and Ikai et al., as applied to claims 37 and 48 above, and further in view of Suzuki et al.

As stated above, the combination of Suzuki and Ikai discloses the same article structure as recited in claims 37 and 48.



Suzuki does not specify the barrier layer comprises titanium oxide in the barrier layer. However, Suzuki teaches the barrier layer is made of metal oxide and metal nitride, the metal used including silicon and titanium.

Therefore, it would have been obvious to one of ordinary skill in the art to include titanium oxide as one of the metal oxides since titanium oxide, titanium nitride, silicon oxide and silicon nitride are similar inorganic metal oxides and metal nitrides products and they have similar properties, such as low moisture permeability. One skilled in the art would have been motivated to use these product as materials for barrier layer with the expectation that similar product would have similar properties and utilities.

6. Claims 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tahon et al and Ikai et al., as applied to claim 37 above, and further in view of Suzuki et al.

As stated above, the combination of Tahon and Ikai discloses the same article structure as recited in claim 37.

Tahon does not specify that the barrier layer comprising titanium oxide or silicon nitride.

Suzuki teaches the inorganic barrier layer is made of metal oxide and metal nitride such as  $\text{Si}_3\text{N}_4$  and  $\text{TiN}$  (Col. 7, lines 15-25).

Suzuki also teaches these metal oxide and metal nitride exhibit low moisture permeability and are stable against moisture (Col. 7, lines 15-30).

Therefore, it would have been obvious to one of ordinary skill in the art to use the metal oxide and metal nitride including  $\text{Si}_3\text{N}_4$  and  $\text{TiN}$ , as taught by Suzuki, to make the barrier layer

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since these materials exhibit low moisture permeability and are stable against moisture and are excellent materials for the barrier layer in Tahon's device.

Although Suzuki does not specify the barrier layer comprises titanium oxide in the barrier layer, Suzuki teaches the barrier layer is made of metal oxide and metal nitride, the metal used including silicon and titanium.

Therefore, it would have been obvious to one of ordinary skill in the art to include titanium oxide as one of the metal oxides since titanium oxide, titanium nitride, silicon oxide and silicon nitride are similar inorganic metal oxides and metal nitrides products and they have similar properties, such as low moisture permeability. One skilled in the art would have been motivated to use these product as materials for barrier layer with the expectation that similar product would have similar properties and utilities.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling X. Xu whose telephone number is 571-272-1546. The examiner can normally be reached on 8:00 - 4:30 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah D. Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ling X. Xu  
Examiner  
Art Unit 1775

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